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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/673,270	11/29/2000	Ernst Eberlein	41001	3590

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EXAMINER

WARE, CICELY Q

ART UNIT	PAPER NUMBER
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2634

DATE MAILED: 11/19/2003

9

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/673,270	Applicant(s) EBERLEIN ET AL.	
	Examiner Cicely Ware	Art Unit 2634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 19-34 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 19-34 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input checked="" type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>3</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. This application has been filed with informal drawings, which are acceptable for examination purposes only. Formal drawings will be required when the application is allowed.

Specification

2. The abstract of the disclosure is objected to because:
 - a. Line 1, applicant uses the phrase "relate to". Examiner suggests using "relating to" for clarification purposes.
Correction is required. See MPEP § 608.01(b).
3. The disclosure is objected to because of the following informalities:
 - a. Pg. 10, line 35, applicant uses the phrase "of a MCM receiver". Examiner suggests using "of an MCM receiver" for clarification purposes.
 - b. Pg. 14-15, line 8, applicant uses the phrase "symbols 200 is shown". Examiner suggests using "symbols 200 are shown" for clarification purposes.
 - c. Pg. 21, line 17, applicant uses the phrase "produces an frequency error". Examiner suggests using the phrase "produces a frequency error" for clarification purposes.
 - d. Pg. 22, line 12, examiner suggests inserting "of" between "both these samples" for clarification purposes.

- e. Pg. 22, line 35-36, applicant uses the phrase "contains a M-fold uncertainty". Examiner suggests using "contains an M-fold uncertainty".
- f. Pg. 22, line 37, examiner suggests re-writing this line for clarification purposes.
- g. Pg. 23, line 3, examiner suggests re-writing this line for clarification purposes.
- h. Pg. 23, line 12, examiner suggests replacing "This" with "The" for clarification purposes.
- i. Pg. 25, line 3, applicant uses "oder". Examiner suggests using "order" for clarification purposes.
- j. Pg. 29, lines 7-10, examiner suggests re-writing these lines for clarification purposes.
- k. Pg. 30, line 2, applicant uses "offsets". Examiner suggests using "offset" for clarification purposes.
- l. Pg. 30, line 9, applicant uses the phrase "demapper of a MCM receiver". Examiner suggests using "demapper of an MCM receiver" for clarification purposes.
- m. Pg. 30, line 30, examiner suggests using "subcarrier symbols" instead of "subcarriers symbols" for clarification purposes.
- n. Pg. 30, lines 31-32, examiner suggests re-writing this line for clarification purposes.
- o. Pg. 31, line 3, applicant uses the phrase "device in a MCM receiver". Examiner suggests using "device in an MCM receiver" for clarification purposes.

p. Pg. 31, lines 10-16, examiner suggest re-writing these lines for clarification purposes.

q. Pg. 31, line 30, applicant uses the phrase "performing same is now". Examiner suggests using "performing the same is now" for clarification purposes.

r. Pg. 39, line 11, examiner suggests using "sent" instead of "send" for clarification purposes.

s. Pg. 40, line 31, applicant uses the phrase "explained above section". Examiner suggests using "explained in the above section".
Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 19-34 are rejected under 35 U.S.C. 102(e) as being anticipated by Ahn (US Patent 6,219,333).

(1) With regard to claim 19, Ahn discloses a method performing a fine frequency synchronization compensating for a carrier frequency deviation from an oscillator frequency in a multi-carrier demodulation system of the type capable of carrying out a

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differential phase decoding of multi-carrier modulated signals, said signals comprising a plurality of symbols, each symbol being defined by phase differences between simultaneous carriers having different frequencies (col. 1, lines 25-33, 58-61, col. 2, lines 27-33), said method comprising the steps of: determining a phase difference between phases of the same carrier in different symbols (col. 2, lines 27-33, col. 7, lines 46-51), determining a frequency offset by eliminating phase shift uncertainties related to the transmitted information from said phase difference making use of a decision device (col. 2, lines 64-66, col. 5, lines 25-35, col. 7, lines 2-5, 45-51, col. 8, lines 1-7); performing a feedback correction of said carrier frequency deviation based on said determined frequency offset (Fig. 1, col. 3, lines 3-9).

(2) With regard to claim 20, inherits all the limitations of claim 19. Ahn further discloses determining respective phase of the same carrier in different symbols (col. 2, lines 27-30); eliminating phase shift uncertainties related to the transmitted information from said phases to determine respective phase deviations making use of a decision device (col. 7, lines 41-67); determining frequency offset by determining a phase difference between said phase deviations (col. 7, lines 41-67).

(3) With regard to claim 21, claim 21 inherits all the limitations of claim 19. Ahn further discloses wherein the method is performed for a plurality of carriers in said symbols (col. 1, lines 25-33, col. 2, lines 21-23); an averaged frequency offset is determined by averaging said determined frequency offsets of said plurality of carriers (col. 7, lines 37-54), and said feedback correction of said frequency deviation is

performed based on said averaged frequency offset (Fig. 1, col. 7, lines 41-67, col. 8, lines 1-7).

(4) With regard to claim 22, claim 22 inherits all the limitations of claims 20 and 21.

(5) With regard to claim 23, claim 23 inherits all the limitations of claim 19. Ahn further discloses the step of determining a phase difference between phases of the same carrier in symbols, which are adjacent in the time axis direction (col. 7, lines 46-49, col. 8, lines 9-11).

(6) With regard to claim 24, claim 24 inherits all the limitations of claim 19. Ahn further discloses the step of eliminating phase shift uncertainties corresponding to phase shifts (col. 1, lines 34-45, 5-57, col. 5, lines 58-61, col. 7, lines 31-63).

(7) With regard to claim 25, claim 25 inherits all the limitations of claim 20. Ahn further discloses the step of determining respective phases of the same carrier in symbols, which are adjacent in the time axis direction (col. 2, lines 27-33, col. 7, lines 46-49, col. 8, lines 9-11).

(8) With regard to claim 26, claim 26 inherits all the limitations of claim 20. Ahn further discloses the step of eliminating phase shifts (col. 7, lines 31-67).

(9) With regard to claim 27, claim 27 inherits all the limitations of claim 19.

(10) With regard to claim 28, claim 28 inherits all the limitations of claim 20.

(11) With regard to claim 29, claim 29 inherits all the limitations of claims 27 and 21.

(12) With regard to claim 30, claim 30 inherits all the limitations of claims 28 and 21.

(13) With regard to claim 31, claim 31 inherits all the limitations of claim 27 and 23.

(14) With regard to claim 32, claim 32 inherits all the limitations of claims 28 and 25.

(15) With regard to claim 33, claim 33 inherits all the limitations of claim 27. Ahn further discloses in (Fig. 1) means for performing a feedback correction of said frequency deviation comprises a numerical controlled oscillator and a complex multiplier (col. 3, lines 3-9, col. 4, lines 53-63, col. 8, lines 1-7).

(16) With regard to claim 34, claim 34 inherits all the limitations of claim 33. Ahn further discloses in (Fig. 1(106, 108)) performing a feedback correction of said frequency deviation further comprises a low path filter preceding said numerical controlled oscillator.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cicely Ware whose telephone number is 703-305-8326. The examiner can normally be reached on Monday – Friday, 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on 703-305-4714. The fax phone numbers

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for the organization where this application or proceeding is assigned are 703-872-9314 for regular communications and 703-872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

Cicely Ware

cqw
November 17, 2003



STEPHEN CHIN
SUPERVISORY PATENT EXAMINEE
TECHNOLOGY CENTER 2600